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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,010	06/21/2006	Shiliang Li	97693	4805
24628	7590	10/18/2007		
WELSH & KATZ, LTD 120 S RIVERSIDE PLAZA 22ND FLOOR CHICAGO, IL 60606			EXAMINER BROMELL, ALEXANDRIA Y	
			ART UNIT 2169	PAPER NUMBER
			MAIL DATE 10/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/584,010	Applicant(s) LI ET AL.	
	Examiner Alexandria Y. Bromell	Art Unit 2169	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 21 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/21/06</u>   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This Office Action is in response to Applicant's application 10/584,010, filed on 6/21/06, which is a 371 of PCT/CN04/00668.

#### ***Priority***

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. China 200310124201.4, filed on 12/31/03.

#### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted on 6/21/06 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

#### ***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-13 are rejected under 35 U.S.C. 101 because the claims are rejected as falling under the judicial exception of an abstract idea which lacks a useful, concrete, and tangible result. A claimed series of steps or acts that do not result in a useful, concrete, and tangible result are not statutory within the meaning of 35 USC 101. In the instant case, the claims recite, "fast locating records on a data page in a database." However, no useful, concrete, and tangible result is claimed. For example, "writing said data," "updating said data," "sending said data" being claimed at the end of the claim may comprise a useful,

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concrete, and tangible result. Absent such a result, however, the claims are not statutory.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosas (U.S. Patent Publication 20020095421) in view of Vagnozzi (U.S. Patent Publication 20030135495).

With respect to claim 1, Kosas teaches **setting a directory structure composed of a group of record deviations, in which, a record deviation is a position deviation of a record, each directory in the directory structure stores the position deviation of one record** (i.e. a bitmap index is an index structure (directory), that stores bitmap vectors and record positions and deviations, [0007], [0294]), **and searching for relative records in the directory**

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**by adopting a locating algorithm, after locating one certain vectors, searching the relative group of records in order according to the record deviation stored in the directory and locating the record to be searched for accurately** (i.e. relevant records are searched for in the second index, or directory, by dichotomy, [0270]). Kosas does not explicitly disclose that the structure is for a page. However, Vagnozzi teaches that the index corresponds to a document page [0012]. Kosas and Vagnozzi are analogous art because they are from the same field of endeavor of accessing and searching data. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Kosas and Vagnozzi before him or her, to modify the methods of Kosas with the teachings of Vagnozzi in order to index records on a data page (Vagnozzi, [0231]). The motivation for doing so would have been to create a page indexing method that allows quick search execution (Vagnozzi, [0234]). Therefore, it would have been obvious to combine Vagnozzi with Kosas to obtain the invention as specified in the instant claim(s).

With respect to claim 2, Kosas teaches storing and accessing large amounts of data [0001]. Kosas does not explicitly disclose putting a record into a field. However, Vagnozzi teaches **putting the record to be searched for into a field structure** (i.e. records are put into data fields, [0004]), **and comparing the record on the data page with the field structure** (i.e. comparing records with fields, [0006]). Therefore, the limitations of claim 2 are rejected in the analysis of claim 1 above, and the claim is rejected on that basis.

With respect to claim 3, Kosas teaches **first endowing two variables low and up which represent the number of index with initial values, in which, low is endowed with a value of 0, up is endowed with a value that is a total number of index on the page, then searching by adopting locating algorithm, and judging which index the record belongs to** (i.e. variables low and high represent layers of row IDs, where 0 corresponds to low density, up to a high of n, [0238]).

With respect to claim 4, Kosas teaches **locating algorithm is dichotomizing locating algorithm** (i.e. dichotomic search is used, [0202]).

With respect to claim 5, Kosas teaches **dichotomizing algorithm is to take out a medial value continuously to compare with the field structure, until the value of up-low is not more than 1** (i.e. dichotomic searches are used to obtain the desired result, [0305], 0308)).

With respect to claim 6, Kosas teaches storing and accessing large amounts of data [0001]. Kosas does not explicitly disclose page searching. However, Vagnozzi teaches **after finding the record, selecting records orderly from index with the number of low to compare with the field structure, till the record next to this record is a up record index of the index with the number of up, if the record is found during this process, finishing the search on this page, if the record is not found, turning to the next page to perform the same match** (i.e. if a search is conducted, the search will end if a match is found on a page, otherwise it will continue until it finds the required

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field, [0253]). Therefore, the limitations of claim 6 are rejected in the analysis of claim 3 above, and the claim is rejected on that basis.

With respect to claim 7, Kosas teaches storing and accessing large amounts of data [0001]. Kosas does not explicitly disclose splitting an index. However, Vagnozzi teaches **when the record number of indices is full due to inserting of one record onto a data page in a database, splitting the current index into two ones, so as to increase a index** (i.e. when the index is full, it is split and the indices are combined within the same blocks instead of adding blocks, and wasting space, [0226]). Therefore, the limitations of claim 7 are rejected in the analysis of claim 1 above, and the claim is rejected on that basis.

With respect to claim 8, Kosas teaches storing and accessing large amounts of data [0001]. Kosas does not explicitly disclose dividing records in the indices. However, Vagnozzi teaches **if the total number of records on the index where the record locates exceeds a maximum value after inserting the record into a chain table, moving all of the indices behind this index one bit backward, thus, increasing the index, and dividing all the records on the index where this record belongs to into two parts, and attaching these two parts of records to the two index respectively** (i.e. if the index is full, it is split and the indices are combined within the same blocks instead of adding blocks, and wasting space, [0226]). Therefore, the limitations of claim 8 are rejected in the analysis of claim 7 above, and the claim is rejected on that basis.

With respect to claim 9, Kosas teaches storing and accessing large amounts of data [0001]. Kosas does not explicitly disclose deleting a record.

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However, Vagnozzi teaches **when deleting a record, taking it out from a chain table and setting a deleting mark to it** (i.e. record is taken out and marked invalid, [0038]). Therefore, the limitations of claim 9 are rejected in the analysis of claim 1 above, and the claim is rejected on that basis.

With respect to claim 10, Kosas teaches storing and accessing large amounts of data [0001]. Kosas does not explicitly disclose adding and deleting records. However, Vagnozzi teaches **obtaining an index next to this index first, and judging the record number of the next index, if the record number exceeds a minimum value, taking out a record from the next index, and adding it to the current index, if the record number is less than or equal to the minimum value, combining these two indices, and deleting the current index** (i.e. indices are combined when deleted, [0226]). Therefore, the limitations of claim 10 are rejected in the analysis of claim 9 above, and the claim is rejected on that basis.

With respect to claim 11, Kosas teaches locating algorithm is dichotomizing locating algorithm (i.e. dichotomic search is used, [0202]).

With respect to claim 12, Kosas teaches locating algorithm is dichotomizing locating algorithm (i.e. dichotomic search is used, [0202]).

With respect to claim 13, Kosas teaches storing and accessing large amounts of data [0001]. Kosas does not explicitly disclose page searching. However, Vagnozzi teaches after finding the record, selecting records orderly from index with the number of low to compare with the field structure, till the record next to this record is a up record up rec of the



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index with tile number of up, if the record is found during this process,  
finishing the search on this page, if the record is not found, turning to the  
next page to perform the same match (i.e. if a search is conducted, the search will end if a match is found on a page, otherwise it will continue until it finds the required field, [0253]). Therefore, the limitations of claim 13 are rejected in the analysis of claim 5 above, and the claim is rejected on that basis.

### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexandria Y. Bromell whose telephone number is 571-270-3034. The examiner can normally be reached on M-R 6:30-5.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ali can be reached on 571-272-4105. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alexandria Y Bromell  
Examiner  
Art Unit 2169

AYB

October 14, 2007

*Handwritten signature*  
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